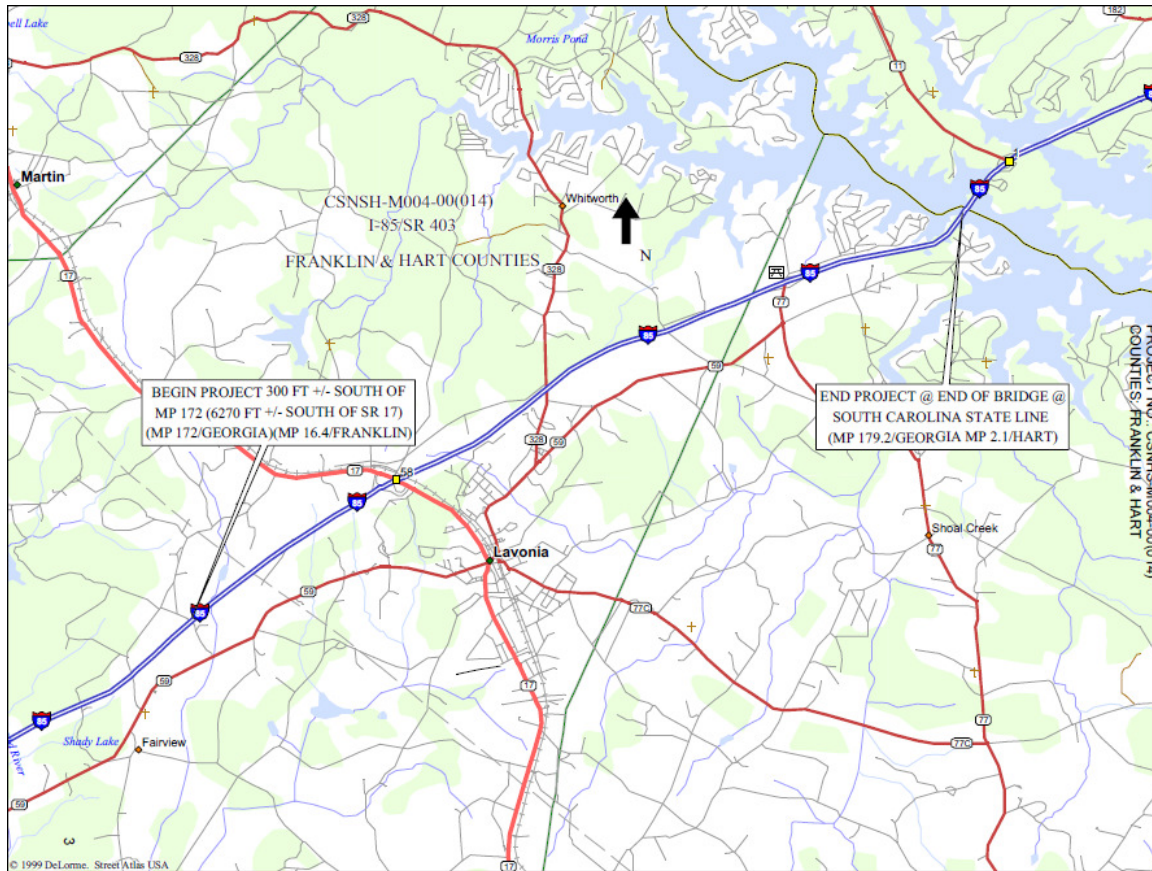


Value Engineering Study Report

Georgia Department of Transportation CSNHS-M004-00(014) – P.I. No. M004014 SR403 / I-85 Resurfacing Franklin & Hart Counties



Value Engineering Team



Design Team



May 7, 2009



May 6, 2009

Ms. Lisa Myers
Design Review Engineer Manager/VE Coordinator
Georgia Department of Transportation-Engineering Services
One Georgia Center
600 W. Peachtree Street NW
Atlanta, GA 30308

RE: Submittal of the final Value Engineering Report I-85 Resurfacing
Project Nos.: CSNHS-M004-00(014) – P.I. No. M004014
Franklin & Hart Counties

This Value Engineering Study, which was performed on May 6, 2009, identified **3 alternatives** of which **3 are recommended for implementation**. We believe that these **Ideas** may have a significant positive affect on the project.

We trust that you will find this report to be in proper order. It should be noted that the results of this workshop are volatile in that they can be overcome by the events that accompany the expeditious continuance of the design process. Accordingly, we encourage an equally expeditious implementation meeting to design the disposition of the contents of this report.

On behalf of our VE Team, we thank you very much for this opportunity to work with you and the hard working staff of the Georgia Department of Transportation.

Yours truly,

PBS&J

A handwritten signature in black ink, appearing to read 'Alan K. Adelgren'.

Alan K. Adelgren, P.E., CVS-Life
VE Team Leader

Value Engineering Study Report

Project No. CSNHS-M004-00(014) – P.I. No. M004014

Resurfacing of I-85

Franklin & Hart Counties

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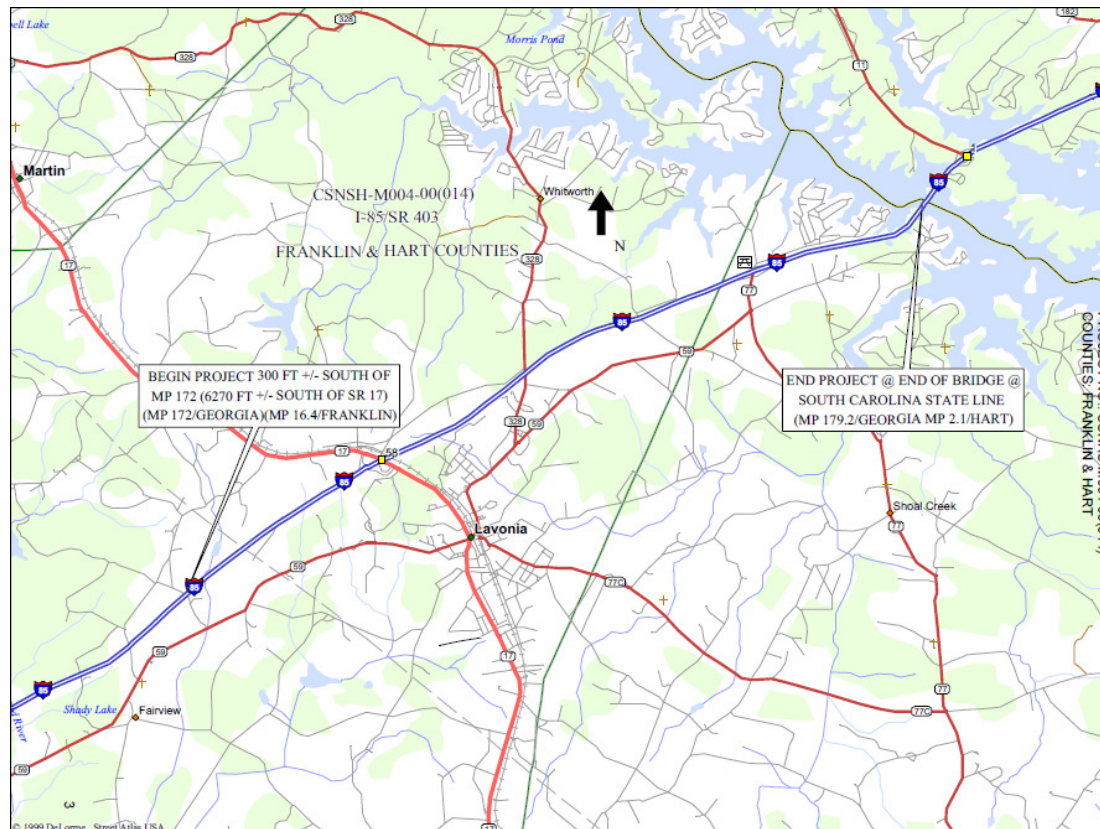
EXECUTIVE SUMMARY

PROJECT OVERVIEW

This report summarizes the analysis, conclusions, and recommendations by the PBS&J Value Engineering workshop team as they performed a Value Engineering Study on May 6, 2009, in Atlanta, at the office of the Georgia Department of Transportation. The subject of the study was Project CSNHS-M004-00(014) - P.I. No. M004014. The project involves the resurfacing of a portion of State Route 403 (Interstate-85) in Franklin and Hart Counties.

PROJECT DESCRIPTION & LOCATION

CSNHS-M004-00(014) is located within Franklin and Hart Counties. The project is 7.20 miles in length beginning at 300 feet south of MP 172 (6,270 feet south of SR 17) and ends at the bridge at the South Carolina State Line (MP179.2). The project also includes upgrading the existing Type 11 Guardrail Anchors to Type 12 Guardrail Anchors, as well as the installation of safety guardrail at the termini of existing Cable-Median Barrier. The present traffic count is 43,010 vehicles per day.



The estimated construction cost for the project is \$9,110,590.60.

PROJECT CONCERNS AND OBJECTIVES

Some of the information from the concept report and the designer's presentation indicated the following important points about the project:

- Comply with Standards
- Need to improve safety
- Re-establish rideability

CONCLUSIONS AND RECOMMENDATIONS

During the speculation phase the VE Team identified **3 alternatives** that appeared to hold potential for reducing the construction cost, improving the end product, and/or reducing the difficulty and time of project construction.

After the evaluation phase was completed, the team had selected **3 of the alternatives for final development**. These recommendations are presented in the **Study Results**.

PBS &

SHEET NO.: **1** of **1**

[illegible]

C = Combined With (Idea Number); DS = Design Suggestion; ABD = Already Being Done; OB= Observation

Value Analysis Project Recommendation

PROJECT:	Georgia Department of Transportation CSNHS-M004-00(014) – P.I. No. M004014 Franklin & Hart Counties SR 403 / I-85 Resurfacing	ALTERNATIVE NO.:	1
DESCRIPTION:	Use OGFC in lieu of PEM	SHEET NO.:	1 of 1

Original Design:

The original design calls for the use of a 12.5mm PEM drainage surface.

Alternative:

The alternative proposal suggests considering the use of 12.5mm OGFC as the drainage surface.

Opportunities:

- Reduces paving cost
- Would not alter existing profile grade

Opportunities:

- Reduces paving cost
- Would not alter existing profile grade

Technical Discussion:

The alternative proposes the consideration of OGFC as a drainage course in lieu of the PEM that is currently designed. The OGFC could be placed in thinner lifts (90LB/SY for OGFC, 135LB/SY for PEM) resulting in a reduction of approximately 30% of the estimated quantities of PEM.

Using OGFC would allow tie-in to existing bridge approach slabs and other associated fixtures without adjustments to the existing profile grade line. It is proposed in this project to mill an additional 1/2" for 250' before and after and overhead bridge approach, resulting in greater milling quantities and complicate milling operations. The use of OGFC would allow for uniform milling operations, and no adjustments vertically.

According to the GDOT Mean Item Summary, the average let cost per ton for the PEM item is 400-3624, which is \$80.94/ton. The estimated cost for OGFC is 400-3206 is \$72.96/ton, resulting in comparable cost savings even before cost saving realized by utilizing the thinner application.

Value Analysis Project Recommendation

PROJECT:	Georgia Department of Transportation CSNHS-M004-00(014) – P.I. No. M004014 Franklin & Hart Counties SR 403 / I-85 Resurfacing	ALTERNATIVE NO.: 2					
DESCRIPTION:	Allow daytime lane closures in the vicinity of the ramps	SHEET NO.: 1 of 1					
<p>Original Design:</p> <p>The original design does not allow any daytime lane closures</p> <p>Alternative:</p> <p>The alternative would allow a daytime single lane closure for construction within the immediate vicinity of the ramps. Closures could be limited to a 2000' work zone and restricted to the hours of 9 a.m. to 3 p.m. Monday thru Thursday.</p> <table border="0"><tr><td><p>Opportunities:</p><ul style="list-style-type: none">• Improve project safety• Reduce construction time</td><td><p>Risks:</p><ul style="list-style-type: none">• Potential for increased congestion</td></tr><tr><td colspan="3"><p>Technical Discussion:</p><p>The combination of boat and RV traffic, reduced visibility, an increased number of impaired drivers, and a complex decision point will create a more hazardous condition during night construction. The ramp and the ramp gore is also an irregular area that requires more attention, more "hand work" and will be more difficult to construct and expose more workers to traffic. By allowing a single lane closure during daylight hours the safety of the work crews and the traveling public could both be increased.</p></td></tr></table>			<p>Opportunities:</p> <ul style="list-style-type: none">• Improve project safety• Reduce construction time	<p>Risks:</p> <ul style="list-style-type: none">• Potential for increased congestion	<p>Technical Discussion:</p> <p>The combination of boat and RV traffic, reduced visibility, an increased number of impaired drivers, and a complex decision point will create a more hazardous condition during night construction. The ramp and the ramp gore is also an irregular area that requires more attention, more "hand work" and will be more difficult to construct and expose more workers to traffic. By allowing a single lane closure during daylight hours the safety of the work crews and the traveling public could both be increased.</p>		
<p>Opportunities:</p> <ul style="list-style-type: none">• Improve project safety• Reduce construction time	<p>Risks:</p> <ul style="list-style-type: none">• Potential for increased congestion						
<p>Technical Discussion:</p> <p>The combination of boat and RV traffic, reduced visibility, an increased number of impaired drivers, and a complex decision point will create a more hazardous condition during night construction. The ramp and the ramp gore is also an irregular area that requires more attention, more "hand work" and will be more difficult to construct and expose more workers to traffic. By allowing a single lane closure during daylight hours the safety of the work crews and the traveling public could both be increased.</p>							

Value Analysis Project Recommendation

PROJECT:	Georgia Department of Transportation CSNHS-M004-00(014) – P.I. No. M004014 Franklin & Hart Counties SR 403 / I-85 Resurfacing	ALTERNATIVE NO. 3
DESCRIPTION:	Review SP 150.11 for Coordination with SCDOT	SHEET NO.: 1 of 1

Original Design:

Special Provision 150 Traffic Control, Section 150.11 Special Conditions does not discuss coordination with South Carolina Department of Transportation.

Alternative:

Add statements to Special Provision 150 to placing responsibility on the Contractor to coordinate and meet the requirements of SCDOT. In addition, indicate that cost for coordination and additional traffic control measures necessary to complete this work to be included in the Price Bid for Traffic Control.

Opportunities:

- Improved coordination with SCDOT
- Minimize potential delays or disruptions to the project

Opportunities:

- None identified

Technical Discussion:

The northern terminus of the project is roughly the bridge located at the South Carolina state line. Lane closures necessary to perform paving operations will extend into South Carolina. To improve coordination and minimize potential delays or disruptions in the work, the Team recommends placing the responsibility and cost of additional coordination and accommodating SCDOT on the contractor. Cost for this work should be included in the price bid for Traffic Control.

VALUE ENGINEERING PROCESS

The Value Engineering team followed the seven step Value Engineering job plan as promulgated by SAVE International. This seven step job plan includes the following:

- Investigative
- Analysis
- Speculation
- Evaluation
- Development
- Recommendation
- VE Report

VALUE ENGINEERING STUDY AGENDA

For

Georgia Department of Transportation

CSNHS-M004-00(014) – P.I. No. M004014

***Franklin & Hart Counties
SR 403 / I-85 Resurfacing***

May 6, 2009

Pre-Workshop Activities

VE Team Leader organizes study, coordinates with the Owner and Designer about the project objectives and materials. The VE Team receives and reviews all project documents.

8:30-9:00 Project Overview (Information Phase)

- Introduction of participants
- Presentation of the project by GDOT
 - Current Construction Completion Schedule
 - Project Cost Estimate and Budget Constraints
- Discussion, questions and answers
- Overview of the VE Process and Agenda – Workshop goals & project goals

Value Engineering Study Agenda (continued)

9:00-10:00 VE Team reviews project (Information Phase)

- Review GDOT's presentation
- Review Cost Estimate
- Review plans

10:00-10:30 Function Analysis Phase

- Identify basic and secondary functions
- Complete Function Matrix/FAST Diagram

10:30-11:30 Creative Phase

- Brainstorming of alternative ideas

11:30-12:30 Evaluation Phase

- Establish criteria for evaluation
- Rank ideas
- Identify "best" ideas for development
- Identify a "champion" for each idea to be developed

1:30-5:00 Development Phase

- Develop alternative ideas with assessment of original design and write up new alternatives including:
 - Opportunities & risks
 - Technical Discussion

Post-Workshop Activities

Team Leader prepares and writes report. The team members review report. Then the report is published and delivered to the client.

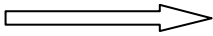
Function Analysis System Technique (FAST DIAGRAM)

Georgia Department of Transportation

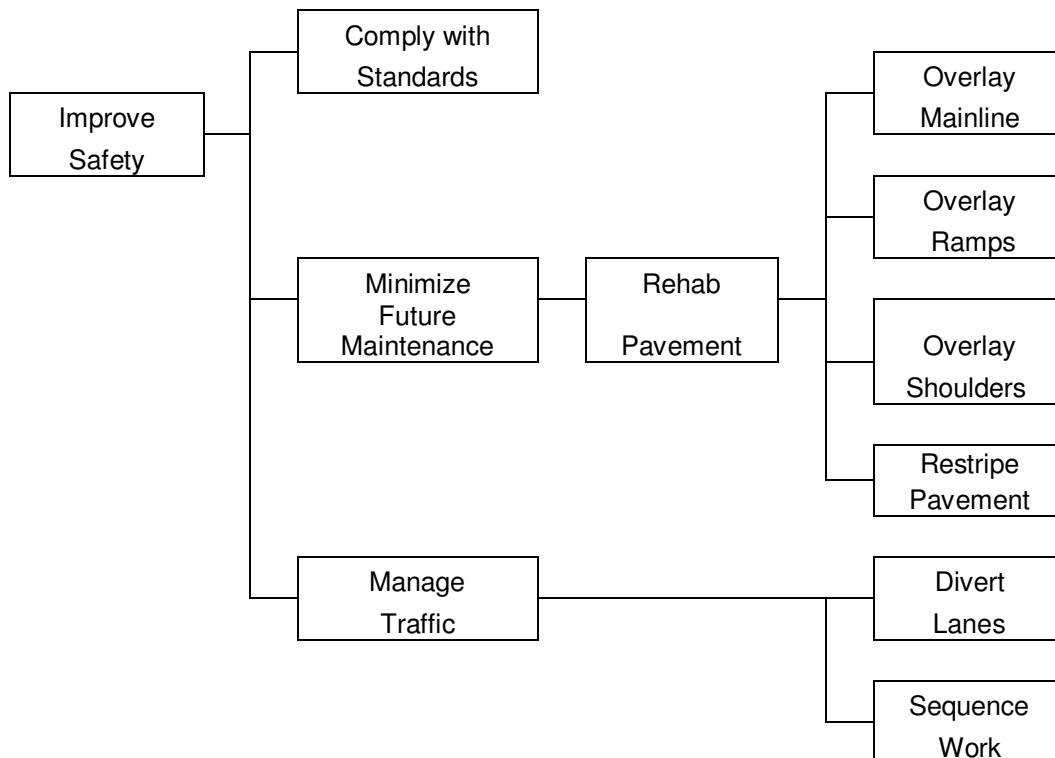
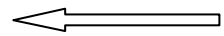
Project No. CSNHS-M004-00(014) - P.I. No. M004014

SR 403 / I-85 Resurfacing
Franklin & Hart Counties

HOW



WHY





VE Value Engineering Study

MEETING PARTICIPANTS

Georgia Department of Transportation CSNHS-M004-(14) - P.I. No. M004014 - I20 Franklin & Hart Counties			May 6, 2009	
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE	
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PBS &

SHEET NO.: 1 of 1

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Rating: 1→2 = Not to be Developed; 3 = Varying Degrees of Development Potential; 4→5 = Most likely to be Developed
C = Combined With (Idea Number); DS = Design Suggestion; ABD = Already Being Done; OB= Observation